

CHAPTER 4 TOXICITY CONTROL PROVISIONS

The intent of a chronic toxicity objective is to prevent harmful effects of pollutants on the survival, growth, and reproduction of aquatic life in surface waters. Toxicity testing to assess chemical pollution provides information unavailable from chemical analysis of water samples. Toxicity tests directly measure the effects of effluent or ambient water on the species tested. They also measure the aggregate toxicity of all constituents in complex mixtures, including chemicals for which there are no water quality objectives.

An assumption behind toxicity testing is that test results can predict aquatic ecosystem impairments. This assumption is supported by a preponderance of published evidence (U.S. EPA 1991; Waller et al. 1996; Dickson et al. 1996; de Vlaming 1997).

This chapter discusses: (1) a chronic toxicity objective; (2) a set of test methods to measure compliance with the objective; and (3) an enforcement approach that emphasizes corrective action. These three topics are covered in Chapters 4.1 through 4.3, respectively.

CHAPTER 4.1 CHRONIC TOXICITY OBJECTIVE

I. PRESENT STATE POLICY

Currently, there is no statewide toxicity objective for California's inland surface waters, enclosed bays, and estuaries. However, all of the RWQCB basin plans contain toxicity objectives, which generally require that all waters be free of toxic substances in toxic amounts. These toxicity objectives and their associated implementation policies vary among the RWQCBs.

The North Coast Basin Plan toxicity objective is typical. It states:

"All waters shall be maintained free of toxic substances in concentrations that are toxic to, or that produce detrimental physiological responses in human, plant, animal, or aquatic life. Compliance with this objective will be determined by use of indicator organisms, analyses of species diversity, population density, growth anomalies, bioassays of appropriate duration, or other appropriate methods as specified by the Regional Water Board.

"The survival of aquatic life in surface waters subjected to a waste discharge, or other controllable water quality factors, shall not be less than that for the same water body in areas unaffected by the waste discharge, or when necessary for other control water that is consistent with the requirements for "experimental water" as described in **Standard Methods for the Examination of Water and Wastewater**, 18th Edition

(1992). As a minimum, compliance with this objective as stated in the previous sentence shall be evaluated with a 96-hour bioassay."

Toxicity objectives in most other basin plans closely resemble the objective of the North Coast Basin Plan. Main differences are outlined below.

The San Francisco Bay Basin Plan toxicity objective is more detailed than most. This toxicity objective states:

"All waters shall be maintained free of toxic substances in concentrations that are lethal to or that produce other detrimental responses in aquatic organisms. Detrimental responses include, but are not limited to, decreased growth rate and decreased reproductive success of resident or indicator species....

"There shall be no chronic toxicity in ambient waters. Chronic toxicity is a detrimental biological effect on growth rate, reproduction, fertilization success, larval development, population abundance, community composition, or any other relevant measure of the health of an organism, population, or community. Chronic toxicity generally results from exposures to pollutants exceeding 96 hours. However, chronic toxicity may also be detected through short-term exposure of critical life stages of organisms.

"As a minimum, compliance will be evaluated using the bioassay requirements contained in Chapter 4.

"The health and life history characteristics of aquatic organisms in waters affected by controllable water quality factors shall not differ significantly from those for the same waters in areas unaffected by controllable water quality factors."

The Los Angeles Basin Plan resembles the North Coast Basin Plan, but also covers chronic toxicity as follows:

"There shall be no chronic toxicity in ambient waters outside mixing zones. To determine compliance with this objective, critical life stage tests for at least three species with approved testing protocols shall be used to screen for the most sensitive species. The test species used for screening shall include a vertebrate, an invertebrate, and an aquatic plant. The most sensitive species shall then be used for routine monitoring. Typical endpoints for chronic toxicity tests include hatchability, gross morphological abnormalities, survival, growth, and reproduction."

The toxicity objectives of the Santa Ana Basin Plan are substantially different from the North Coast toxicity objective. The following is the Santa Ana Basin Plan toxicity objective for enclosed bays and estuaries:

"Toxic substances shall not be discharged at levels that will bioaccumulate in aquatic resources to levels which are harmful to human health.

"The concentrations of toxic substances in the water column, sediment or biota shall not adversely affect beneficial uses."

The Santa Ana Basin Plan toxicity objective for inland surface waters contains the above language and the following phrase:

"The concentrations of contaminants in waters which are existing or potential sources of drinking water shall not occur at levels which are harmful to human health."

Chronic toxicity is regulated for all discharges within the jurisdiction of the Ocean Plan. The chronic toxicity objective in the Ocean Plan is 1 TU_c as a daily maximum.

The Ocean Plan defines TU_c (Toxic Units Chronic) as 100/NOEL. NOEL (No Observed Effect Level) "is expressed as the maximum percent effluent or receiving water that causes no observable effect on a test organism, as determined by the result of a critical life stage toxicity test...."

II. ISSUE DESCRIPTION

Beneficial use designations pertaining to aquatic habitat apply to the majority of surface waters in California. The application of a chronic toxicity objective to these waters should help ensure the protection of these beneficial uses. Along with an implementation program, including a standard set of toxicity tests to measure compliance, efforts to protect aquatic life from toxicity should become more consistent and uniform throughout the State.

An objective for chronic toxicity could take either a narrative or a numerical form. The objective would apply outside any designated mixing zone (discussed in Chapter 1.2.2).

The rescinded ISWP and EBEP contained the following objective for chronic toxicity:

"There shall be no chronic toxicity in ambient waters outside mixing zones. The water quality objective for chronic toxicity is 1.0 TU_c as a daily average."

The ISWP and EBEP further stated: "Chronic toxicity, expressed as TU_c, equals 100/NOEL. NOEL (No Observed Effect Level) is the maximum percent test water that causes no observed effect on a test organism, as determined in a critical life stage toxicity test listed in Table 4."

The Toxicity Task Force met and discussed the issue of a toxicity objective. A majority of the task force members preferred a uniform statewide objective, expressed as a narrative, and detailed implementation procedures. Six out of eleven stakeholder representatives supported

the following narrative objective:

"Surface waters outside of any allowed mixing zones shall be free from lethal or sublethal toxicity in amounts which impair designated aquatic resource beneficial uses. Aquatic life community structures and function shall not be degraded by toxic discharges."

The stakeholders representing Agriculture and Storm Water supported the following narrative objective:

"Surface waters outside of any mixing zones shall be free from lethal or sublethal toxicity in amounts which impair designated aquatic resource beneficial uses."

The Agricultural Waters Task Force developed a recommendation on a narrative objective for toxicity which includes language similar to the Central Valley Basin Plan's toxicity objective. The task forces's proposed toxicity objective also contained language delineating the type of waters to which it should be applied.

Those Toxicity Task Force members in favor of a narrative toxicity objective suggested that it would allow for flexibility in implementation of the objective. A narrative objective allows for options other than setting numeric permit limits for effluent toxicity. Toxicity Task Force members concluded that "Adoption of a narrative objective with distinct implementation steps potentially increases the array of permitting possibilities and available responsive actions". Some task force members were of the opinion that a numeric toxicity objective would leave permitted dischargers with "little or no incentive to extend monitoring beyond attempts to comply with individual permit limits, whereas implementation of a narrative objective to protect surface waters in a given watershed would incorporate monitoring beyond end of pipe." Most task force members felt that the adoption of a narrative toxicity objective would facilitate watershed management and assist in application of the toxicity objective to nonpoint sources of pollution.

The Department of Fish and Game (DFG) representative and some RWQCB staff favored a numeric chronic toxicity objective, because it would "...provide adequate, uniform and consistent protection of aquatic life in California..." These members stated that "where beneficial uses are impaired, it is far easier for Regional Boards to pursue corrective actions where numeric objectives are in place." They also suggested that it would "set an explicit level where aquatic life and their beneficial uses are affected by pollution". These task force members contended that it would "simplify enforcement and compliance procedures" because it would be simple to identify violations. The need for flexibility "could be introduced in implementation of permit limits by the use of average values and/or maximum magnitude level, by varying the points of application, and by setting compliance procedure to eliminate toxicity".

III. ALTERNATIVES FOR SWRCB ACTION

Alternative 1. No action. The RWQCBs would continue to apply their existing toxicity objectives contained in the basin plans. This alternative would allow RWQCBs the flexibility to determine what toxicity objective is best suited to their region, but would not address Toxicity Task Force members' concerns about inconsistency of the varied objectives in the basin plans.

Alternative 2. Adopt a narrative toxicity objective. Toxicity Task Force members concluded that a narrative toxicity objective would allow for flexibility in implementation. The adoption of a narrative objective was considered by most task force members to allow for a variety of permitting approaches and response actions to deal with specific water body types. A single statewide objective would allow for the development of a statewide implementation program that deals with task force concerns about the variability of toxicity test results. A single statewide toxicity objective would also allow a statewide implementation policy, as recommended by all Toxicity Task Force members, that deals with solutions to toxicity problems and not just enforcement actions.

Alternative 3 Adopt a numeric toxicity objective. Some task force members recommended this alternative. A numeric objective would set an explicit level that signifies when toxicity occurs. It could simplify enforcement and compliance procedures by clearly defining a violation. It would restrict permitting approaches and response actions, and would not address the variability of toxicity test results.

IV. STAFF RECOMMENDATION

Adopt Alternative 2.

CHAPTER 4.2 SELECTION OF CHRONIC TOXICITY TESTING METHODS

I. PRESENT STATE POLICY

Several test methods are in use to measure compliance with chronic toxicity objectives in the Ocean Plan and various basin plans. They are outlined below.

Ocean Plan Marine and Estuarine Chronic Toxicity Tests

In March 1997, the SWRCB revised the list of nine critical life stage toxicity testing protocols to be used for determining toxicity of ocean waste discharges. They include the following nine tests:

Plant:

Giant kelp, *Macrocystis pyrifera*; germination and germ tube length

Invertebrates:

Red abalone, *Haliotis rufescens*; larval shell development

East coast mysid shrimp, *Mysidopsis bahia* (non-indigenous); survival, growth, and fecundity

West coast mysid shrimp, *Holmesimysis costata*; survival and growth

Echinoderm fertilization: sand dollar, *Dendraster excentricus*, and purple sea urchin,

Strongylocentrotus purpuratus

Echinoderm development: sand dollar, *D. excentricus*, and purple sea urchin, *S. purpuratus*

Pacific oyster, *Crassostrea gigas*, and mussel, *Mytilus spp.*; embryo-larval development

Fish:

Topsmelt, *Atherinops affinis*; larval growth and survival

Inland silverside, *Menidia beryllina* (non-indigenous); larval survival and growth

The seven test methods using indigenous test organisms are the preferred toxicity tests for compliance monitoring. The RWQCBs will allow waste dischargers to use inland silversides and the east coast mysid shrimp when other test organisms are not available.

Freshwater Chronic Toxicity Tests

The San Francisco Bay RWQCB has approved the following toxicity test methods for use in measuring toxicity of waste discharges to fresh waters as part of compliance monitoring:

Fathead minnow, *Pimephales promelas*; larval survival and growth

Daphnid, *Ceriodaphnia dubia*; survival and reproduction

Green alga, *Selenastrum capricornutum*; growth

These freshwater chronic toxicity test methods were developed and revised by U.S. EPA (U.S. EPA 1994) and U.S. EPA recommends them for use in NPDES permits.

II. ISSUE DESCRIPTION

Most members of the Toxicity Task Force agreed that the SWRCB should consider new chronic toxicity test methods, using new species or life-stages, as they are developed. The current list of critical life stage toxicity tests had to satisfy several protocol selection criteria in order to be considered for inclusion in the Ocean Plan. The nine criteria are listed below:

1. the existence of a detailed written description of the test method;
2. a history of testing with a reference toxicant;
3. interlaboratory comparisons of the method;
4. adequate testing with wastewater;
5. measurement of an effect that is clearly adverse;

6. measurement of at least one nonlethal effect;
7. use of marine organisms native or established in California;
8. information that documents relative sensitivity to toxic/reference materials and compares to current Ocean Plan-listed tests; and
9. the organism(s) specified in the protocol must be readily available either by field collection or by laboratory culture.

For the most recent triennial review of the Ocean Plan, SWRCB staff convened a 10 member external advisory group known as the Protocol Review Committee (PRC) to review test protocol selection criteria and to consider updating the 1990 Ocean Plan list of standard tests. The PRC is an assemblage of aquatic toxicology experts representing industry, academia, and government.

In October 1994, the PRC recommended to SWRCB staff a revised list of critical life stage tests acceptable for use in measuring compliance. The list includes four west coast protocols (giant kelp, red abalone, west coast mysid shrimp, and topsmelt fish) developed by the SWRCB's Marine Bioassay Project (MBP), one protocol (sea urchin and sand dollar development) developed by the Southern California Coastal Water Research Project, and four test methods--(1) sea urchin and sand dollar fertilization, (2) silversides fish, (3) oyster and mussel, and (4) east coast mysid shrimp--developed by the U.S. EPA.

Development of Alternate Test Methods Using Indigenous Test Species

Alternate test procedures may be developed using organisms indigenous to the receiving water of the waste discharge. However, the following factors should be considered before undertaking such a task: (1) development of a new test method will require years of research and significant financial investment; (2) the newly-developed tests (marine and estuarine) should meet the nine criteria established by the PRC to be considered for the Ocean Plan list; and (3) the new protocol will have to be at least as sensitive as U.S. EPA's 40 CFR 136 methods.

While most members of the Toxicity Task Force supported SWRCB consideration of newly-developed tests, industry members were opposed, for the following reasons: (1) finding a quality testing laboratory to perform the toxicity monitoring may be difficult due to technicians' inexperience conducting alternate indigenous species tests; (2) tests may not be available year-round due to inadequate supply; (3) newly-revised or developed test methods will not have published toxicity identification evaluation (TIE) methods so dischargers will have great difficulty identifying and controlling sources of effluent toxicity; and (4) there is little scientific basis for concluding that using indigenous (alternate) test species provides any additional protection of the beneficial uses of receiving waters.

III. ALTERNATIVES FOR SWRCB ACTION

Alternative 1. Adopt the Ocean Plan list of critical life stage protocols for measuring toxicity of ocean and estuarine waters and discharges, and U.S. EPA's 40 CFR 136 test methods for monitoring inland waters and discharges. The current Ocean Plan list of critical life stage protocols reflects the latest advancements in the field of aquatic toxicology and has already been approved by the SWRCB and U.S. EPA for use in compliance monitoring.

Alternative 2. Consider adoption of additional test methods for monitoring toxicity of surface waters and discharges as these are developed. Alternate test procedures may use organisms indigenous to the receiving water of the waste discharge. However, the following factors bear on such development and adoption: (1) development of a new test method will require years of research and significant financial investment; (2) new tests (marine and estuarine) should meet the nine criteria used to evaluate Ocean Plan tests; and (3) the new protocol must be no less sensitive than U.S. EPA's 40 CFR 136 methods.

IV. STAFF RECOMMENDATION

Adopt Alternatives 1 and 2.

CHAPTER 4.3 PROGRAM OF IMPLEMENTATION

I. PRESENT STATE POLICY

It has been about a dozen years since RWQCBs began to use "chronic" toxicity tests to assess the ability of effluents and surface waters to sustain conditions suitable for aquatic life. Whole-effluent toxicity (WET) testing at permitted discharges has been boosted by U.S. EPA regulations that require large POTWs to perform those tests and require WET limits in permits for discharges that "cause, have a reasonable potential to cause, or contribute to" toxicity in receiving waters.

From these years of experience, the SWRCB and RWQCBs, with much public and agency participation, have developed programs to monitor, characterize, and eliminate toxicity in surface waters. Refinement of test methods and of procedures to identify the sources and agents of toxicity has been continuous.

Guidance on point source toxicity testing, such as test species, effluent sampling procedures, dilution series, monitoring frequency, dilution waters, and reference toxicant testing requirements, is found in the U.S. EPA publication, Denton and Narvaez (1996). This publication also offers guidelines for conducting toxicity reduction evaluations (TREs). For other handbooks on TREs, see U.S. EPA 1989a, 1989b, 1992, 1993b, 1993c and 1996.

The general approach to toxicity control at RWQCBs consists of five steps: (1) routine monitoring with bioassays; (2) when and if necessary, a determination that the pattern of test results shows persistent or substantial toxicity; (3) a TRE; (4) a compliance schedule, if needed; and (5) enforcement actions, if appropriate.

Although the RWQCB approach is well established, controversy has arisen regarding the pattern of test results used to confirm the presence of toxicity, and how these test results are used in a compliance program. These issues are discussed below.

The San Francisco Bay Basin Plan section entitled "Whole effluent toxicity limits and control program" states:

"Permits shall require that if consistent toxicity is exhibited, then a chronic toxicity identification evaluation (TIE) and toxicity reduction evaluation (TRE) shall be conducted. Specific language in permits requires the development of workplans for implementing TIEs. TIEs will be initiated within 30 days of detection of persistent toxicity. The purpose of a TIE is to identify the chemical or combination of chemicals causing the observed toxicity. Every reasonable effort using currently available TIE methodologies shall be employed by the discharger. The Regional Board recognizes that identification of causes of chronic toxicity may not be successful in all cases.

"The purposes of a TRE are to identify the source(s) of the toxic constituents and evaluate alternative strategies for reducing or eliminating their discharge. The TRE shall include all reasonable steps to reduce toxicity to the required level. In addition, the Regional Board will review chronic toxicity test results to assess acute toxicity and consider the need for an acute TIE.

"Following completion of the TRE, if consistent toxicity is still exhibited in a discharge, then the discharger shall pursue all feasible waste minimization measures at a level that is acceptable to the Regional Board. The discharger must document that the acceptable level of participation is maintained by submitting reports to the Regional Board according to a specified schedule.

"A toxicity reduction evaluation may again be required in situations where chronic toxicity still exists and new techniques for identifying and reducing toxicity become available. Alternatively, the cause of effluent toxicity may change, so that existing techniques will enable identification and reduction of toxicity.

"Consideration of any enforcement action by the Regional Board for violation of the effluent limitation will be based in part on the discharger's actions in identifying and reducing sources of persistent toxicity."

The Santa Ana Basin Plan states:

"The Regional Board requires the initiation of a Toxicity Reduction Evaluation (TRE) if a discharge consistently exceeds its chronic toxicity effluent limit. The Regional Board, to date, has interpreted the "consistently exceeds" trigger as the failures of three successive monthly toxicity tests, each conducted on separate samples. Initiation of a TRE has also been conditioned on a determination that a sufficient level of toxicity exists to permit effective application of the analytical techniques required by a TRE."

II. ISSUE DESCRIPTION

Regarding interpretation and enforcement of toxicity limitations, the Toxicity Task Force recommended that the "SWRCB should adopt a provision that: No single test result shall constitute a violation." The rationale "centered on the variability of test results (especially chronic WET tests) and the reliability of these test results in determining permit compliance. In addition single toxicity test results cannot characterize the duration, magnitude or frequency of the toxicity measured in ambient waters or discharge sites."

The task force stated further that: "Equally important, resolution of unacceptable toxicity through the Toxicity Identification/Reduction Evaluation...process requires toxicity to be demonstrated on more than one occasion. U.S. EPA states in its TIE guidance [U.S. EPA. 1988. Methods for Aquatic Toxicity Identification Evaluations. Phase I Toxicity Characterization Procedures. EPA-600/3-88/034] that "TIEs require that toxicity be present frequently enough so that repeated testing can characterize and subsequently identify and confirm the toxicant in Phases II and III. Therefore, enough testing should be done to assure consistent presence of toxicity before TIEs are initiated."

One task force member, from the DFG, took exception for cases "where the toxicity exceedance is of large magnitude or contributed to a significant environmental impact...e.g., high acute toxicity...Because routine whole effluent toxicity testing may occur less frequently than other NPDES monitoring requirements and receiving water monitoring generally occurs even less, a single test result may be the only evidence that a serious, deleterious discharge has or is occurring. Therefore, the Regional Boards should retain their discretionary power to enforce toxicity permit limits or compliance objectives when they deem it appropriate."

Staff believes that the DFG argument is directed at acute or lethal toxicity, not to sensitive life stage, sublethal or "chronic" toxicity.

"Trigger" Alternatives

If a single instance of exceeding an effluent limitation or water quality objective for toxicity is not to be considered a violation, a policy must identify a number or pattern of failed test

results that would "trigger" further action such as intensified testing or a TRE, or would constitute a violation.

There are many options for multiple-sample TRE triggers for chronic toxicity. For example, the Santa Ana Basin Plan, quoted above, identifies the trigger as "failures of three successive monthly toxicity tests."

Another option provides a two-step trigger. Under this concept, a defined level of failure of routine toxicity tests would constitute the first trigger, and would lead to accelerated testing. Then a second trigger, typically confirmation by the accelerated testing of the earlier test results, would invoke a TRE. The purpose of accelerated monitoring is to be able to identify persistent toxicity and the need for a TRE in a shorter time than would be provided through routine monitoring. Versions of this option were recommended by the Toxicity Task Force and in U.S. EPA guidance (Denton and Narvaez 1996), and are used in the San Francisco Bay Basin Plan.

The task force offered several suggestions for the first-step trigger for accelerated monitoring. These included a single test showing high toxicity (e.g., response of test organisms differ from that of control organisms by more than a given ratio or percentage -- say, 75 percent increase in defined anomalies), or two successive samples exhibiting toxicity.

U.S. EPA guidance (Denton and Narvaez 1996) suggests a first-step trigger of any one test result greater than 2 TU_c . The San Francisco Bay Basin Plan provides that dischargers who monitor toxicity quarterly must increase to monthly sampling if a three-sample median exceeds 1 TU_c or if any single sample exceeds 2 TU_c , after any allowance for dilution.

For a second-step trigger (that is, to identify persistent or repeated toxicity), the task force suggested various combinations using three, four, or five tests in which the mean or median test result shows toxicity. U.S. EPA Regions 9 and 10 guidance for major dischargers is to run six tests in the twelve weeks following the first exceedance of a permit requirement; if chronic toxicity occurs in any of the six tests, then a TRE should begin.

The same first- or second-step trigger may not be suitable for every case. Trigger mechanisms may need to be adapted to such factors as monitoring frequency, discharge variability, and other statistical considerations.

Different types of discharge vary in toxicity over time, often unpredictably. The factors which influence temporal variability in urban runoff are different from those influencing agricultural runoff or treatment plant effluent, and trigger mechanisms might need to take account of such variability.

Statistical analysis of test results, and the sensitivity of those tests, are also important considerations in selection of a trigger. For example, some test methods can detect a 10 percent difference between the responses of test organisms and control organisms as a

statistically significant difference, while other test methods cannot detect less than a 40 percent difference. It may be reasonable to rely on a longer series of test results showing toxicity, based on a more sensitive test, but a shorter series, based on a less sensitive test, before requiring corrective action.

Differences in sensitivity also occurs among laboratories, among tests runs, among organisms and life stages, etc.

Implications for Enforcement

In recommending multiple-sample triggers, the Toxicity Task Force also recognized the desirability of resolving apparent violations through corrective action. Under the concept of a "triggered" compliance mechanism, enforcement actions would be taken if the discharger fails to initiate or conduct the appropriate corrective action, such as accelerated monitoring or a TRE, in a timely fashion. The task force recommended that:

"The SWRCB should adopt a process to implement the toxicity objective that includes the following elements:

- (a) routine monitoring and trigger if there is a "toxic event" then go to
- (b) accelerated monitoring if there is persistent toxicity then go to a toxicity reduction evaluation (TRE) and if necessary
- (c) a compliance schedule (which may include Best Management Practices, permit limits, etc.)."

This is similar to the provision in the San Francisco Bay Basin Plan:

"Consideration of any enforcement action by the Regional Board for violation of the effluent limitation [for toxicity] will be based in part on the discharger's actions in identifying and reducing sources of persistent toxicity."

U.S. EPA Regions 9 and 10 appear to concur. Their guidance (Denton and Narvaez 1996) deals with this subject in Chapter 5, "Enforcement guidelines for WET [whole effluent toxicity] violations." It states:

"In general, U.S. EPA or the State should not take enforcement action following a violation of a WET limitation if the discharger adequately complies with its NPDES permit requirements for accelerated testing and conducting a TRE. Enforcement action would be appropriate if the permittee failed to aggressively conduct a TRE or was otherwise recalcitrant in addressing the toxicity...Exceptions to this general guideline include situations where the WET violation(s) are of large magnitude, or contributed to significant environmental impacts..."

In the same chapter, under the heading, "When to take enforcement action", Denton and Narvaez state:

"In comparison to chemical-based effluent violations, it can be more difficult to identify the causative agents of WET violations and to isolate the sources of toxicity. In addition, once the toxic agents and sources are identified, it can be more difficult to control these sources, especially without costly technological solutions. This is especially true for municipal treatment facilities where the public, commercial establishments and industry can all contribute to toxicity. Although these factors should not deter EPA or the State from taking enforcement action, they should be considered when assessing the appropriate enforcement response and determining reasonable compliance dates."

The rescinded ISWP/EBEP stated, in the Program of Implementation, part D, Toxicity Reduction Requirements: "If a discharge consistently exceeds an acute or chronic toxicity effluent limitation, a toxicity reduction evaluation (TRE) is required. The TRE shall include all reasonable steps to identify the source(s) of toxicity. Once the source of toxicity is identified, the discharger shall take all reasonable steps necessary to reduce toxicity to the required level."

III. ALTERNATIVES FOR SWRCB ACTION

Alternative 1. Allow RWQCBs to use results from single toxicity tests to confirm the presence of chronic toxicity. This alternative, while not specified in any current basin plan, is not inconsistent with the basin plans or with U.S. EPA guidance. This option could strengthen the importance of individual toxicity testing results and give the RWQCBs more alternatives for enforcement.

Alternative 2. Require the RWQCBs to use results from multiple samples to confirm the occurrence or persistence of chronic toxicity. This alternative is consistent with current basin plans and RWQCB practice, with U.S. EPA guidance, and with the recommendation of the Toxicity Task Force. It compensates for variability in toxicity test results. It provides a firm basis for a decision to conduct a TRE.

IV. STAFF RECOMMENDATION

Adopt Alternative 2.